What is claimed is:

1. A method for forming a floating gate, comprising:
providing a semiconductor substrate, wherein a gate dielectric layer and a conducting layer are sequentially formed on the semiconductor substrate;
forming a patterned hard mask layer having an opening on the semiconductor substrate, wherein a portion of the surface of the conducting layer is exposed through the opening;
forming a spacer on a sidewall of the opening;
removing the patterned hard mask layer;
forming a conducting spacer on a sidewall of the spacer; and
sequentially removing the exposing conducting layer and the exposing gate dielectric layer.

2. The method for forming a floating gate of claim 1, wherein the hard mask layer is a silicon nitride layer.

3. The method for forming a floating gate of claim 1, wherein the gate dielectric layer is gate oxide layer.

4. The method for forming a floating gate of claim 1, wherein the conducting layer is a poly-layer.

5. The method for forming a floating gate of claim 1, wherein the spacer is an insulating layer.

6. The method for forming a floating gate of claim 5, wherein the insulating layer is silicon oxide layer.

7. The method for forming a floating gate of claim 1, wherein the material of the insulating layer is different from the hard mask layer.

8. The method for forming a floating gate of claim 1, wherein the conducting spacer is a poly-layer.

9. A method for forming a floating gate, comprising:
providing a semiconductor substrate;
sequentially forming a gate dielectric layer and a first conducting layer on the semiconductor substrate;
sequentially forming a hard mask layer and a patterned resist layer having a first opening on the first conducting layer, wherein a portion of the hard mask layer is exposed through the opening;
etching the hard mask layer to form a second opening using the patterned resist layer as a mask;
removing the patterned resist layer;
conformally forming an insulating layer on the surface of the hard mask layer, wherein the second opening is filled with the insulating layer;
anisotropically etching the insulating layer to form a first spacer on a sidewall of the second opening;
removing the hard mask layer;
conformally forming a second conducting layer on the surface of the first conducting layer and the first spacer;
anisotropically etching the second conducting layer to form a second spacer on a sidewall of the first spacer;

sequentially removing the exposing first conducting layer and the exposing gate dielectric layer, wherein a floating gate consists of a first conducting layer and the second spacer.

10. The method for forming a floating gate of claim 9, wherein the gate dielectric layer is a gate oxide layer.

11. The method for forming a floating gate of claim 9, wherein the first conducting layer is a poly-layer.

12. The method for forming a floating gate of claim 9, wherein the hard mask layer is a silicon nitride layer.

13. The method for forming a floating gate of claim 9, wherein the insulating layer is a silicon oxide layer.

14. The method for forming a floating gate of claim 9, wherein the material of the insulating layer is different from the hard mask layer.

15. The method for forming a floating gate of claim 9, wherein the second conducting layer is a poly-layer.

16. The method for forming a floating gate of claim 9, wherein a method of the anisotropically etching is a plasma dry-etching process.

17. A floating gate, comprising:

a conductive base; and

a pair of conductive protruding layers, wherein the conductive protruding layers are formed on the conductive base, each conductive protruding layer

has a bottom portion and a tip of the top portion respectively, the bottom portion connects to the conductive base, the conductive protruding layer stretches out toward the other layer from the bottom portion to the protruding tip of the top portion thereof, and a floating gate with multiple tips consists of the conductive base and the conductive protruding layer.

18. The method for forming a floating gate of claim 17, wherein the conductive base is a poly-layer.

19. The method for forming a floating gate of claim 17, wherein the dual conductive protruding layer is a poly-layer.

20. A floating gate, comprising:

a conductive base; and

a conductive protruding layer, wherein the conductive protruding layer is formed on the conductive base, the conductive protruding layer has a first tip portion and a second tip portion, the first tip portion has a first bottom portion and a first tip of the top portion, the second tip portion has a second bottom portion and a second tip of the top portion, the first bottom portion and the second bottom portion connects to the conductive base, the first tip of the top portion stretches out toward the second tip of the top portion from the first bottom portion, and the second tip of the top portion stretches out toward the first tip of the top portion from the second bottom portion, and a

floating gate with multiple tips consists of the conductive base and the conductive protruding layer.

21. The method for forming a floating gate of claim 20, wherein the conductive base is a poly-layer.

22. The method for forming a floating gate of claim 20, wherein the conductive protruding layer is a poly-layer.